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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,774	04/09/2007	Hamdan Halimaton	HALI3001/JEK	6194

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EXAMINER	
METZMAIER, DANIEL S	
ART UNIT	**PAPER NUMBER**
1796	
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03/25/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,774	HALIMATON, HAMDAN	
	Examiner	Art Unit	
	Daniel S. Metzmaier	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/9/2006; 4/9/2007; & 11/7/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/7/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-13 are pending.

Priority

1. Receipt is acknowledged of papers received in this national stage application from the International Bureau (PCT Rule 17.2(a)), submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as obvious over Tang et al, CN 1449997 A as evidenced by the corresponding English language Machine Translation obtained online @ http://english.cnipr.com/newenpat/index.htm and Derwent Abstract, AN 2004-063165, in view of Kistler, US 2,249,767, and White et al, US 2,807,588.

Applicant's Invention

The instant claims are directed to methods of producing silica aerogel and the aerogel produced by said method. Claim 1 is representative and generally includes:

> 1. (Original) A method for producing a silica aerogel, which comprises
>
> (a) combustion of rice husk until the white ash is obtained,
>
> (b) dissolving rice husk ash in aqueous sodium hydroxide,
>
> (c) heating and stirring the resultant gel mixture to produce a sodium silicate solution,

(d) adding concentrated sulphuric acid to the resulting water glass solution to convert the sodium silicate to silica and produce a silica hydrogel,

(e) aging the hydrogel to allow the gel structure to develop,

(f) displacing the water with a C_1 to C_4, alcohol, to produce an alcogel, and

(g) subjecting the alcogel, to super critical drying to form an aerogel.

Prior art

Tang et al (translation pages 8, 9 and 10[1], examples, particularly example 1) disclose the following steps:

Instant claim 1 step (a): Tang et al discloses the use of "waste material rice husk dust" after burning rice husk, *i.e.*, resulting from the combustion of rice husk (see translation at page 5, specific embodiment). Tang et al (see translation at page 5) recognizes prior art practices of combusting rice husk at 600 ^{o}C.

Instant claim 1 step (b): (1) The leaching with alkaline solution. (i) Mixing rice husk dust, *i.e.*, rice husk ash from combustion, with NaOH solutions. **Instant claim 1 step (c):** (ii) boiling and thrusting down, *e.g.*, 30 or 45 minutes.

(2) Filter and wash.

Instant claim step (d): (3) Acid treating. Adjusting pH to 5-9 with sulfuric acid of 1 mole/ℓ, (acids of 0.1 to 2 N taught) thus forming a hydrogel.

Instant claim step (e): (4) Aging hydrogel. Hydrogel to age for 24 hours at 27 ^{o}C.

[1] Page numbering is actual pages numbered. Found in upper left of pages.

Instant claim step (f): (5) Replace water in hydrogel with lower alcohol. Soak hydrogel in ethanol for 40 hours.

Instant claim step (g): (6) Super critically dry with CO_2 to form aerogel. (Instant claim step (g)).

Differences with the prior art

Tang et al differs from the claims in an explicit disclosure or claimed characterization as heating "with stirring of the gel" in instantly claimed step (c) and the concentration of the sulfuric acid in the acid treating of instantly step (d).

Step (c) stirring or gel characterization is not patentable difference

Tang et al (pages 8-10 of translation including the examples) discloses the boiling and thrusting down (translation term), which would implicitly provide mixing as required by claimed step (c) "stirring". The materials would be in gel form resulting from digesting the ash in the alkaline solution. It is a well settled tenet in patent law that compounds or compositions and all of their properties are generally inseparable.

Modification of the acid treating concentration

Kistler is directed to methods of making aerogels, more specifically silica based aerogels and was patented in 1941. Kistler (page 1, left column, lines 43 et seq; and column 2, lines 29 et seq) teaches typical processes for making aerogels comprising: forming a hydrogel in a liquid medium, e.g., water, simply by acidifying water glass with sulfuric acid by well known manners of manufacturing silica gel of commerce. Forming an alcogel by replacing the water with alcohol by soaking in alcohol and subjecting the

alcogel, to drying in an autoclave to form an aerogel. The step of forming a hydrogel from sodium silicate by treatment with sulfuric acid is well established in the art.

White et al (column 12) cites the Kistler '767 patent as prior art as well as others. White et al discloses making hydrogels and aerogels (title and abstract). White et al (examples) teaches making hydrogels and aerogels by acidifying sodium silicate (*i.e.*, water glass) with concentrated 97 % sulfuric acid followed by formation of the aerogels. White et al (further teaches the sodium silicates have a ratio of Na_2O : SiO_2 of 1 : 3.2 and 1 : 3.33 (examples I or IV and III, respectively), which "about 1 : 3.33" of claim reads.

These references are combinable because they teach methods of making silica aerogels. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ sufficient sodium hydroxide to provide a sodium silicate Na_2O : SiO_2 ratio of "about 1 : 3.33" and treating said sodium silicate with concentrated (*e.g.*, 97 %) sulfuric acid to form the hydrogels of the Tang et al aerogel making processes as obvious art recognized parameters in the art of silica aerogel making processes.

The remaining claim limitations are explicitly disclosed in the prior art cited here and/or obvious variations therefrom. Tang et al (pages 5 and 6) teach purifying by leaching with sulfuric acid to improve the purity is known. Furthermore, merely modifying the process conditions such as temperature and concentration is not a patentable modification absent a showing of criticality for a result-effective variable, *i.e.*, a variable which achieves a recognized result.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David W. Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel S. Metzmaier/
Primary Examiner, Art Unit 1796

DSM